
Judgmental or Probabilistic Sampling?

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Judgment Sampling: Pros

Judgment sampling is the subjective selection of sampling locations in space and time

- Consistent with intuitive feeling
- Easy to direct, easy to do
- May be cost effective **if** the conceptual model for the project is correct

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Judgment Sampling: Cons

- Use of the incorrect conceptual model can lead to incorrect decisions
- Inference from sample to population questionable
- Not suitable for **estimating** underlying population parameters (e.g., mean) **with specified confidence**
- Not suitable for **testing hypotheses** about underlying populations **with specified decision error rates**

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Key points to consider for sampling design

- Intuitive and straightforward to implement
- Linked to the conceptual model that describes the situation being investigated
- As cost effective as possible
- Is the sampling design suitable for estimation or decision making?
- Will this sampling design give for reviewers or users of the data reason to be skeptical of the results or conclusions?

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Judgmental Sampling Designs

The most widely used judgmental sampling designs:

- Convenience
- Snowball
- Quota
- Volunteer
- Haphazard
- Directed / Expert judgment

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Convenience Sampling Design

- Sample units are easily accessible with minimal effort
- Units chosen randomly because they happen to be present when the study begins
- Target population is not specified
- A typical example would be taking the first 6 objects passing on a conveyor belt after arrival of an inspector

Intuitive: **Yes** Estimation/decision making? **No**
Cost effective: **Yes** Skeptical results? **Yes**
Linked to the conceptual model: **No**

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Snowball Sampling Design

- Take “suitable” samples up to preset sample size
- Used when suitable samples contains a rare attribute that is hard to find
- One suitable sample may lead to other suitable samples
- An example would be a study involving specimens with a certain disability being treated for a disorder, e.g., elk with CWD

Intuitive: Yes Estimation/decision making? No
Cost effective: Yes Skeptical results? Yes
Linked to the conceptual model: No

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Quota Sampling Design

- Subgroup quotas are predetermined
- The units are taken at first randomly
- After a quota has been filled; units chosen from that subgroup are discarded
- A typical example would be to decide 60% of the sample must be black-tipped gulls, 30% white-tipped gulls, and the remaining 10% variegated gulls

Intuitive: Yes Estimation/decision making? No
Cost effective: Yes Skeptical results? Yes
Linked to the conceptual model: Maybe

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Volunteer Sampling Design

- All sample units have volunteered to be in the sample
- No statistical basis for selection
- Volunteers are not usually representative of the population and heavy bias can occur
- An example would be an opinion poll where people who carry strong opinions demand to be included

Intuitive: Yes Estimation/decision making? Maybe
Cost effective: Yes Skeptical results? Yes
Linked to the conceptual model: No

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Haphazard Sampling Design

- Sample units chosen to approximate random sampling
- Bias is expected due to unknown favoritism exhibited by the person making the selections
- Can be more conservative than a random sample due to tendency to avoid edges and to more widely space the sampled units than a truly random sample

Intuitive: Yes Estimation/decision making? No
Cost effective: No Skeptical results? Maybe
Linked to the conceptual model: No

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Directed Sampling Design

- Selection of sampling units is based on judgment
- Desirable sample units are deliberately chosen
- Conclusions depend entirely on the validity and accuracy of professional judgment
- Judgmental sampling may be appropriate for situations where schedule or emergency considerations prevail

Intuitive: No Estimation/decision making? No
Cost effective: No Skeptical results? Yes
Linked to the conceptual model: Yes

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Probabilistic Sampling Design

- Each sampling unit has a known probability of selection
- Sample is representative of the population, so inference to population characteristics is possible
- Many different types of probabilistic designs
- Statistical theory supports decisions based on the sample results

Intuitive: Yes Estimation/decision making? Yes
Cost effective: Yes Skeptical results? No
Linked to the conceptual model: Yes

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Comparing Sampling Designs

	Intuitive	Linked to conceptual model	Cost effective	Can be used for estimation or decision making	Possibility of skeptical results
Convenience	★		★		✓
Snowball	★		★		✓
Quota	★	★	★	★	✓
Volunteer	★		★	★	✓
Haphazard	★				✓
Directed		★			✓
Probabilistic	★	★	★	★	